

WHAT IS CLAIMED IS:

1. A method for preparing a tube end for a welding operation,
comprising the steps of:
5 utilizing a rotary milling tool having a first milling head to
remove a predetermined amount of radial thickness from the outer
diameter of said tube to a predetermined depth; and
beveling the end of said tube utilizing said rotary milling
tool.
- 10 2. A method according to claim 1, further including the step of
removing a membrane adjacent said tube end, or a weld overlay
adjacent said tube end, or a combination thereof to a
predetermined depth.
- 15 3. A method according to claim 1, further including the step of
removing a weld overlay from a front portion or a back portion of
said tube, or a combination thereof, with said first milling head to
a predetermined depth either simultaneously with or after said
20 tube radial thickness removal step.
- 25 4. A method according to claim 1, wherein from about 2% up
to about 25% of said tube radial thickness is removed during said
tube diameter removal step, and wherein said tube diameter
removal step is performed to a depth of from about 0.25 to about
1.5 inches when measured from said tube end.
- 30 5. A method according to claim 3, wherein from about 2% up
to about 25% of said tube radial thickness is removed during said
tube diameter removal step, and wherein said tube diameter
removal step is performed to a depth of from about 0.25 to about
1.5 inches when measured from said tube end.

6. A method according to claim 4, wherein up to about 10% of said tube radial thickness is removed, and wherein said depth is from about 0.25 to about 1 inch.

5 7. A method according to claim 5, wherein up to about 10% of said tube radial thickness is removed, and wherein said depth is from about 0.25 to about 1 inch.

8. A method according to claim 2, wherein said beveling step
10 is performed with a second milling head and said membrane removal is performed with a third milling head.

9. A method according to claim 8, wherein up to about 25% of said tube radial thickness is removed during said tube diameter
15 removal step, and wherein said tube diameter removal step is performed to a depth of from about 0.25 to about 1.5 inches when measured from said tube end.

10. A rotary milling head for a rotary milling tool, comprising:
20 a cylindrical body having an annular recess, said body adapted to be connected to a rotary milling tool;

one or more cutting blades connected to said body by a securing element, each said blade disposed circumferentially around the rotational axis of the milling head, each said blade
25 having a cutting edge defining an annular cutting sweep having an inner radius which is adapted to remove an outer radial thickness from an annular tube in an amount of from about 2% up to about 25% of said annular tube thickness, and an outer radius at least equal to said tube outer diameter.

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11. A milling head according to claim 10, wherein said blade has a face surface with a bore extending therethrough through which said securing element connects said blade to said body, said

blade having a countersink around said bore capable of receiving at least a portion of a head of said securing element.

5 12. A milling head according to claim 11, wherein said securing element connects said blade to said body whereby the securing element head portion has an end which is flush mounted or recess mounted in relation to said blade face.

10 13. A milling head according to claim 11, wherein said securing element connects said blade to said body whereby the securing element has a head portion which extends out from said blade face surface a first distance which is less than or equal to a second distance measured from a lower edge of the securing element head to a lower cutting edge of the blade.

15 14. A milling head according to claim 12, wherein said blade cutting sweep inner radius is from about 2% to about 15% of said annular tube thickness.

20 15. A milling head according to claim 13, wherein said blade cutting sweep inner radius is from about 2% to about 15% of said annular tube thickness.

25 16. A milling head according to claim 12, wherein said blade cutting sweep inner radius is from about 2% to about 10% of said annular tube thickness.

30 17. A milling head according to claim 13, wherein said blade cutting sweep inner radius is from about 2% to about 10% of said annular tube thickness.

18. A milling head according to claim 14, wherein said first distance is less than about 95% of said second distance.

5 19. A milling head according to claim 15, wherein said first distance is less than about 90% of said second distance.

10 20. A method according to claim 1, wherein said first milling head has a blade secured to said milling head with a securing element, and wherein said securing element has an end portion which extends a first distance which is less than or equal to a second distance measured from a bottom edge of the securing element to a bottom edge of the blade.